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(54) **LIGHT EMITTING DIODE SYSTEM**

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USPC ..... 315/181–186, 193, 291, 185 R, 185 S; 348/370; 700/295
See application file for complete search history.

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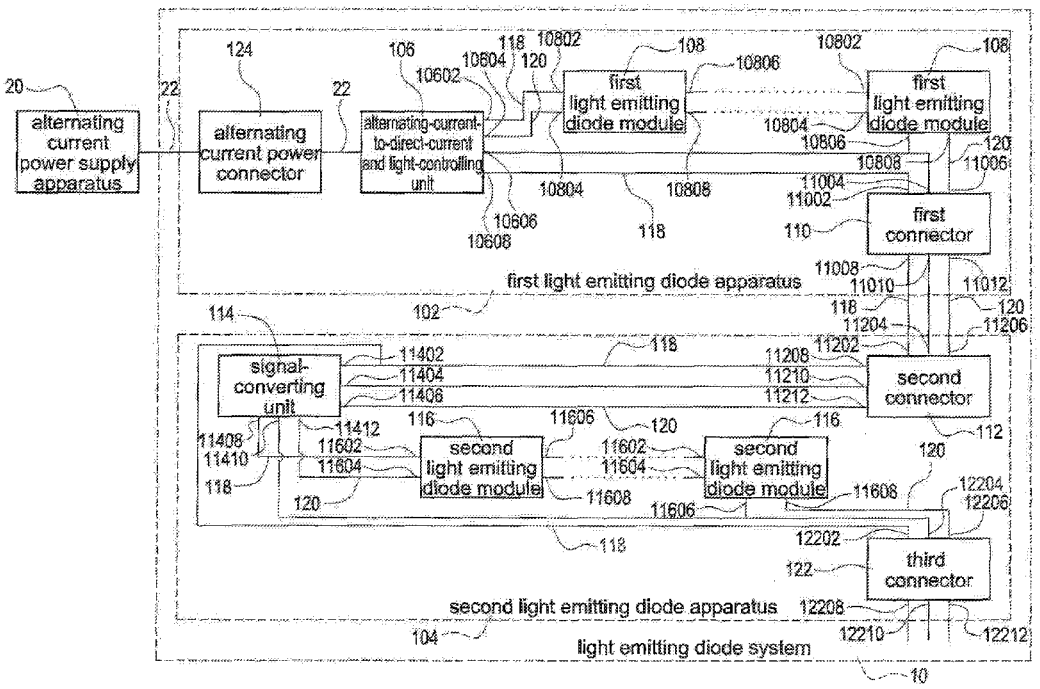
(57) **ABSTRACT**

A light emitting diode system includes a first light emitting diode apparatus and a second light emitting diode apparatus. The first light emitting diode apparatus includes an alternating-current-to-direct-current and light-controlling unit, a plurality of first light emitting diode modules and a first connector. The second light emitting diode apparatus includes a second connector, a signal-converting unit and a plurality of second light emitting diode modules. The first light emitting diode apparatus outputs a drive direct current power and a light-controlling signal to the signal-converting unit through the first connector and the second connector. Therefore, the signal-converting unit is configured to control colors and intensities of the second light emitting diode modules.

10 Claims, 2 Drawing Sheets



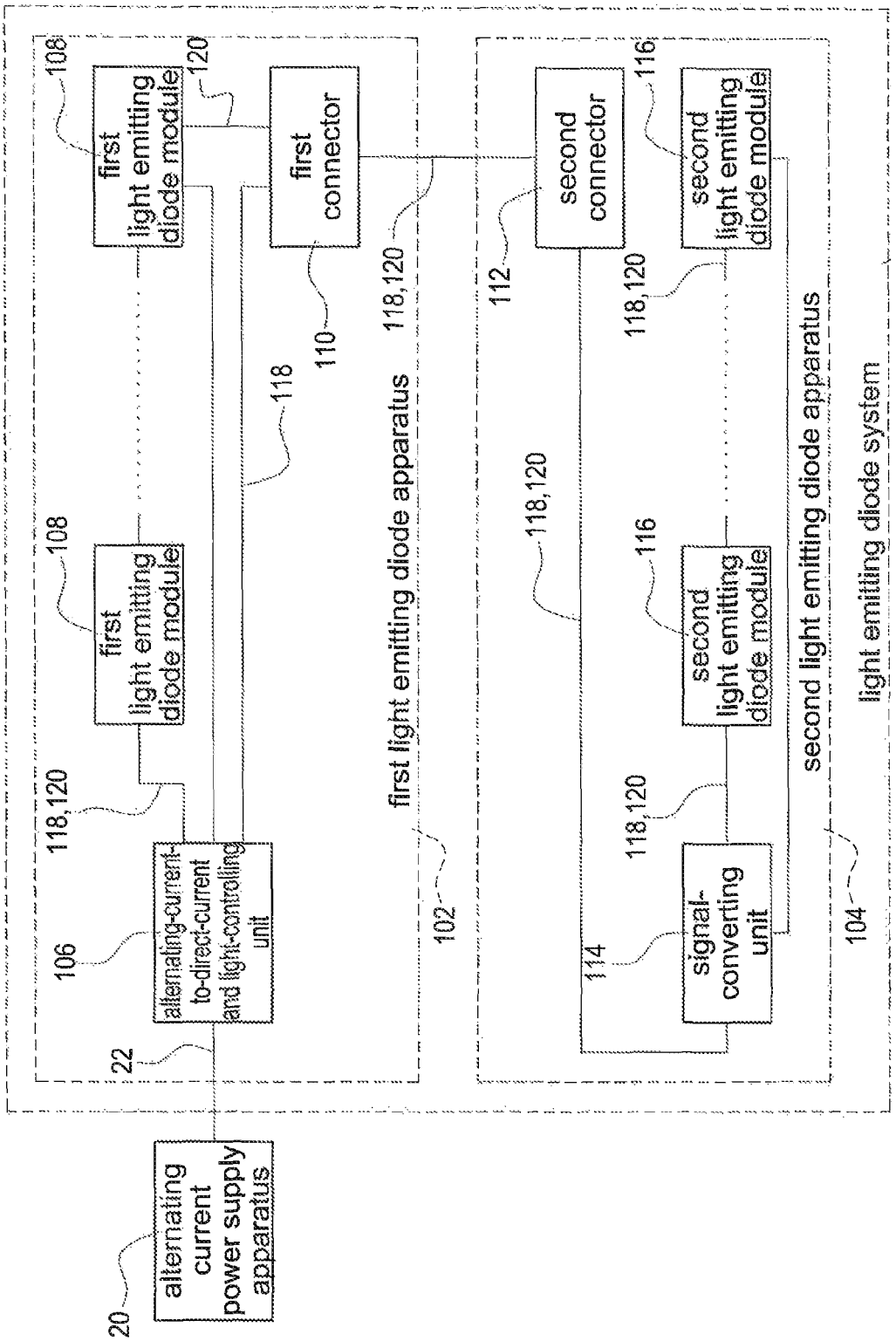

alternating current power supply apparatus
20
22
alternating-current-to-direct-current and light-controlling unit
106
118,120
first light emitting diode module
108
first connector
110
118
120
first light emitting diode apparatus
102
second connector
112
second light emitting diode module
116
signal-converting unit
114
second light emitting diode apparatus
104
light emitting diode system
10

FIG. 1

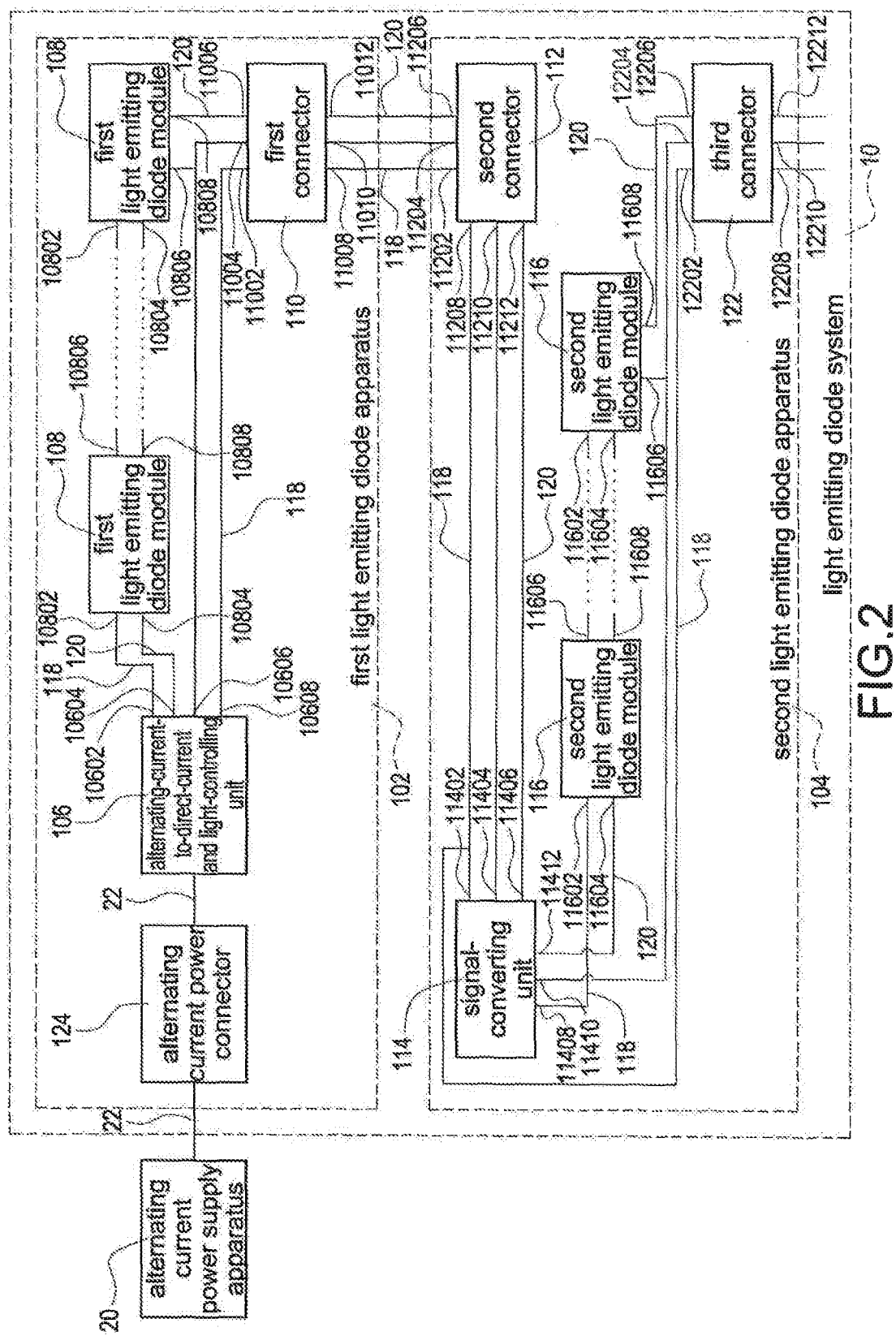

alternating current power supply apparatus
alternating current power connector
alternating-current-to-direct-current and light-controlling unit
first light emitting diode module
first connector
first light emitting diode apparatus
signal-converting unit
second light emitting diode module
second connector
second light emitting diode apparatus
third connector
light emitting diode system

FIG.2

LIGHT EMITTING DIODE SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a light emitting diode system, and especially relates to an improved light emitting diode system.

2. Description of the Related Art

Nowadays, the connection types of the light emitting diode lamp strings are separated into two types: the serial-type connection and the parallel-type connection. The light emitting diode lamp strings are widely used for external walls of the building, decoration of trees, signboards, and scenery designing.

The related art light emitting diode lamp strings are commonly employed to be connected in series. Also, the amount of the light emitting diode lamp strings is determined according to the volume of the decorated objects. In addition, the controller of the light emitting diode lamp string can control the light emitting diode lamp string which the controller is arranged in only.

The disadvantage of the related art serial-type light emitting diode lamp string mentioned above is that the related art serial-type light emitting diode lamp strings cannot share an alternating-current-to-direct-current power and control circuit. Therefore, the cost is increasing.

SUMMARY OF THE INVENTION

In order to solve the above-mentioned problems, an object of the present invention is to provide a light emitting diode system.

In order to achieve the object of the present invention mentioned above, the light emitting diode system is applied to an alternating current power supply apparatus. The light emitting diode system includes a first light emitting diode apparatus and a second light emitting diode apparatus. The second light emitting diode apparatus is electrically connected to the first light emitting diode apparatus. The first light emitting diode apparatus includes an alternating-current-to-direct-current and light-controlling unit, a plurality of first light emitting diode modules and a first connector. The alternating-current-to-direct-current and light-controlling unit is electrically connected to the alternating current power supply apparatus. The first light emitting diode modules are electrically connected to each other in series. A first of the first light emitting diode modules is electrically connected to the alternating-current-to-direct-current and light-controlling unit. A last of the first light emitting diode modules is electrically connected to the alternating-current-to-direct-current and light-controlling unit. The first connector is electrically connected to the alternating-current-to-direct-current and light-controlling unit and the last of the first light emitting diode modules. The second light emitting diode apparatus includes a second connector, a signal-converting unit and a plurality of second light emitting diode modules. The second connector is electrically connected to the first connector. The signal-converting unit is electrically connected to the second connector. The second light emitting diode modules are electrically connected to each other in series. A first of the second light emitting diode modules is electrically connected to the signal-converting unit. A last of the second light emitting diode modules is electrically connected to the signal-converting unit. The alternating current power supply apparatus outputs an alternating current power to the alternating-current-to-direct-current and light-controlling unit. The alternating-current-to-direct-current and light-controlling unit converts the alternating current power into a drive direct current power. The alternating-current-to-direct-current and light-controlling unit outputs the drive direct current power and a light-controlling signal to the first of the first light emitting diode modules. Then the drive direct current power and the light-controlling signal are transmitted to the other first light emitting diode modules to control colors and intensities of the first light emitting diode modules. The alternating-current-to-direct-current and light-controlling unit outputs the drive direct current power to the signal-converting unit through the first connector and the second connector. The last of the first light emitting diode modules outputs the light-controlling signal to the signal-converting unit through the first connector and the second connector. The signal-converting unit outputs the drive direct current power and the light-controlling signal to the first of the second light emitting diode modules after the signal-converting unit processes the drive direct current power and the light-controlling signal. Then the drive direct current power and the light-controlling signal are transmitted to the other second light emitting diode modules to control colors and intensities of the second light emitting diode modules.

The efficiency of the present invention is that a plurality of light emitting diode lamp strings can be electrically connected to each other in series efficiently, and can share an alternating-current-to-direct-current circuit to save cost.

BRIEF DESCRIPTION OF DRAWING

FIG. **1** shows a block diagram of a first embodiment of the light emitting diode system of the present invention.

FIG. **2** shows a block diagram of a second embodiment of the light emitting diode system of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

FIG. **1** shows a block diagram of a first embodiment of the light emitting diode system of the present invention. A light emitting diode system **10** is applied to an alternating current power supply apparatus **20**. The light emitting diode system **10** includes a first light emitting diode apparatus **102** and a second light emitting diode apparatus **104**. The second light emitting diode apparatus **104** is electrically connected to the first light emitting diode apparatus **102**.

The first light emitting diode apparatus **10** includes an alternating-current-to-direct-current and light-controlling unit **106**, a plurality of first light emitting diode modules **108** and a first connector **110**. The alternating-current-to-direct-current and light-controlling unit **106** is electrically connected to the alternating current power supply apparatus **20**. The first light emitting diode modules **108** are electrically connected to each other in series. A first of the first light emitting diode modules **108** is electrically connected to the alternating-current-to-direct-current and light-controlling unit **106**. A last of the first light emitting diode modules **108** is electrically connected to the alternating-current-to-direct-current and light-controlling unit **106**. The first connector **110** is electrically connected to the alternating-current-to-direct-current and light-controlling unit **106** and the last of the first light emitting diode modules **108**.

The second light emitting diode apparatus **104** includes a second connector **112**, a signal-converting unit **114** and a plurality of second light emitting diode modules **116**. The second connector **112** is electrically connected to the first connector **110**. The signal-converting unit **114** is electrically connected to the second connector **112**. The second light

emitting diode modules **116** are electrically connected to each other in series. A first of the second light emitting diode modules **116** is electrically connected to the signal-converting unit **114**. A last of the second light emitting diode modules **116** is electrically connected to the signal-converting unit **114**.

The alternating current power supply apparatus **20** outputs an alternating current power **22** to the alternating-current-to-direct-current and light-controlling unit **106**. The alternating-current-to-direct-current and light-controlling unit **106** converts the alternating current power **22** into a drive direct current power **118**. The alternating-current-to-direct-current and light-controlling unit **106** outputs the drive direct current power **118** and a light-controlling signal **120** to the first of the first light emitting diode modules **108**. Then the drive direct current power **118** and the light-controlling signal **120** are transmitted to the other first light emitting diode modules **108** to control colors and intensities of the first light emitting diode modules **108**.

The alternating-current-to-direct-current and light-controlling unit **106** outputs the drive direct current power **118** to the signal-converting unit **114** through the first connector **110** and the second connector **112**. The last of the first light emitting diode modules **108** outputs the light-controlling signal **120** to the signal-converting unit **114** through the first connector **110** and the second connector **112**. The signal-converting unit **114** outputs the drive direct current power **118** and the light-controlling signal **120** to the first of the second light emitting diode modules **116** after the signal-converting unit **114** processes the drive direct current power **118** and the light-controlling signal **120**. Then the drive direct current power **118** and the light-controlling signal **120** are transmitted to the other second light emitting diode modules **116** to control colors and intensities of the second light emitting diode modules **116**.

FIG. **2** shows a block diagram of a second embodiment of the light emitting diode system of the present invention. The description for the elements shown in FIG. **2**, which are similar to those shown in FIG. **1**, is not repeated here for brevity. Moreover, the second light emitting diode apparatus **104** further includes a third connector **122**. The third connector **122** is electrically connected to the signal-converting unit **114**, the second connector **112** and the last of the second light emitting diode modules **116**. The alternating-current-to-direct-current and light-controlling unit **106** outputs the drive direct current power **118** to the third connector **122** through the first connector **110** and the second connector **112**. The last of the second light emitting diode modules **116** outputs the light-controlling signal **120** to the third connector **122**.

The first light emitting diode apparatus **102** further includes an alternating current power connector **124**. The alternating current power connector **124** is electrically connected to the alternating current power supply apparatus **20** and the alternating-current-to-direct-current and light-controlling unit **106**.

The alternating-current-to-direct-current and light-controlling unit **106** includes a positive voltage contact **10602**, a data output contact **10604**, a negative voltage contact **10606** and a direct current power supply contact **10608**. The positive voltage contact **10602** outputs the drive direct current power **118**. The data output contact **10604** outputs the light-controlling signal **120**. The direct current power supply contact **10608** outputs the drive direct current power **118**.

The first light emitting diode module **108** includes a first positive voltage contact **10802**, a first data input contact **10804**, a first negative voltage contact **10806** and a first data output contact **10808**. The first positive voltage contact **10802** of the first of the first light emitting diode modules **108** is electrically connected to the positive voltage contact **10602**. The first positive voltage contacts **10802** of the other first light emitting diode modules **108** are electrically connected to the first negative voltage contacts **10806** of a previous of the first light emitting diode modules **108**. The first positive voltage contact **10802** outputs the drive direct current power **118**.

The first data input contact **10804** of the first of the first light emitting diode modules **108** is electrically connected to the data output contact **10604**. The first data input contacts **10804** of the other first light emitting diode modules **108** are electrically connected to the first data output contacts **10808** of the previous of the first light emitting diode modules **108**. The first data input contact **10804** is used for inputting the light-controlling signal **120**.

The first negative voltage contact **10806** of the last of the first light emitting diode modules **108** is electrically connected to the negative voltage contact **10606** and the first connector **110**. The first negative voltage contacts **10806** of the other first light emitting diode modules **108** are electrically connected to the first positive voltage contacts **10802** of a next of the first light emitting diode modules **108**.

The first data output contact **10808** of the last of the first light emitting diode modules **108** is electrically connected to the first connector **110**. The first data output contacts **10808** of the other first light emitting diode modules **108** are electrically connected to the first data input contacts **10804** of the next of the first light emitting diode modules **108**. The first data output contact **10808** outputs the light-controlling signal **120**.

The first connector **110** includes a first connector direct current power input contact **11002**, a first connector negative voltage input contact **11004**, a first connector data input contact **11006**, a first connector direct current power output contact **11008**, a first connector negative voltage output contact **11010** and a first connector data output contact **11012**.

The first connector direct current power input contact **11002** is electrically connected to the direct current power supply contact **10608**. The first connector direct current power input contact **11002** is used for inputting the drive direct current power **118**. The first connector negative voltage input contact **11004** is electrically connected to the negative voltage contact **10606** and the first negative voltage contact **10806** of the last of the first light emitting diode modules **108**. The first connector data input contact **11006** is electrically connected to the first data output contact **10808** of the last of the first light emitting diode modules **108**. The first connector data input contact **11006** is used for inputting the light-controlling signal **120**.

The first connector direct current power output contact **11008** is electrically connected to the first connector direct current power input contact **11002**. The first connector direct current power output contact **11008** outputs the drive direct current power **118**. The first connector negative voltage output contact **11010** is electrically connected to the first connector negative voltage input contact **11004**. The first connector data output contact **11012** is electrically connected to the first connector data input contact **11006**. The first connector data output contact **11012** outputs the light-controlling signal **120**.

The second connector **112** includes a second connector direct current power input contact **11202**, a second connector negative voltage input contact **11204**, a second connector data input contact **11206**, a second connector direct current power output contact **11208**, a second connector negative voltage output contact **11210** and a second connector data output contact **11212**.

The second connector direct current power input contact **11202** is electrically connected to the first connector direct current power output contact **11008**. The second connector direct current power input contact **11202** is used for inputting the drive direct current power **118**. The second connector negative voltage input contact **11204** is electrically connected to the first connector negative voltage output contact **11010**. The second connector data input contact **11206** is electrically connected to the first connector data output contact **11012**. The second connector data input contact **11206** is used for inputting the light-controlling signal **120**.

The second connector direct current power output contact **11208** is electrically connected to the second connector direct current power input contact **11202**. The second connector direct current power output contact **11208** outputs the drive direct current power **118**. The second connector negative voltage output contact **11210** is electrically connected to the second connector negative voltage input contact **11204**. The second connector data output contact **11212** is electrically connected to the second connector data input contact **11206**. The second connector data output contact **11212** outputs the light-controlling signal **120**.

The signal-converting unit **114** includes a control side direct current power input contact **11402**, a control side negative voltage input contact **11404**, a control side data input contact **11406**, a control side direct current power output contact **11408**, a control side negative voltage output contact **11410** and a control side data output contact **11412**.

The control side direct current power input contact **11402** is electrically connected to the second connector direct current power output contact **11208**. The control side direct current power input contact **11402** is used for inputting the drive direct current power **118**. The control side negative voltage input contact **11404** is electrically connected to the second connector negative voltage output contact **11210**. The control side data input contact **11406** is electrically connected to the second connector data output contact **11212**. The control side data input contact **11406** is used for inputting the light-controlling signal **120**.

The control side direct current power output contact **11408** is electrically connected to the first of the second light emitting diode modules **116**. The control side direct current power output contact **11408** outputs the drive direct current power **118**. The control side negative voltage output contact **11410** is electrically connected to the control side negative voltage input contact **11404**. The control side data output contact **11412** is electrically connected to the first of the second light emitting diode modules **116**. The control side data output contact **11412** outputs the light-controlling signal **120**.

The second light emitting diode module **116** includes a second positive voltage contact **11602**, a second data input contact **11604**, a second negative voltage contact **11606** and a second data output contact **11608**.

The second positive voltage contact **11602** of the first of the second light emitting diode modules **116** is electrically connected to the control side direct current power output contact **11408**. The second positive voltage contacts **11602** of the other second light emitting diode modules **116** are electrically connected to the second negative voltage contacts **11606** of a previous of the second light emitting diode modules **116**. The second positive voltage contact **11602** is used for inputting the drive direct current power **118**.

The second data input contact **11604** of the first of the second light emitting diode modules **116** is electrically connected to the control side data output contact **11412**. The second data input contacts **11604** of the other second light emitting diode modules **116** are electrically connected to the second data output contacts **11608** of the previous of the second light emitting diode modules **116**. The second data input contact **11604** is used for inputting the light-controlling signal **120**.

The second negative voltage contact **11606** of the last of the second light emitting diode modules **116** is electrically connected to the control side negative voltage output contact **11410** and the third connector **122**. The second negative voltage contacts **11606** of the other second light emitting diode modules **116** are electrically connected to the second positive voltage contact **11602** of a next of the second light emitting diode modules **116**.

The second data output contact **11608** of the last of the second light emitting diode modules **116** is electrically connected to the third connector **122**. The second data output contacts **11608** of the other second light emitting diode modules **116** are electrically connected to the second data input contact **11604** of the next of the second light emitting diode modules **116**. The second data output contact **11608** outputs the light-controlling signal **120**.

The third connector **122** includes a third connector direct current power input contact **12202**, a third connector negative voltage input contact **12204**, a third connector data input contact **12206**, a third connector direct current power output contact **12208**, a third connector negative voltage output contact **12210** and a third connector data output contact **12212**.

The third connector direct current power input contact **12202** is electrically connected to the second connector direct current power output contact **11208** and the control side direct current power input contact **11402**. The third connector direct current power input contact **12202** is used for inputting the drive direct current power **118**. The third connector negative voltage input contact **12204** is electrically connected to the control side negative voltage output contact **11410** and the second negative voltage contact **11606** of the last of the second light emitting diode modules **116**. The third connector data input contact **12206** is electrically connected to the second data output contact **11608** of the last of the second light emitting diode modules **116**. The third connector data input contact **12206** is used for inputting the light-controlling signal **120**.

The third connector direct current power output contact **12208** is electrically connected to the third connector direct current power input contact **12202**. The third connector direct current power output contact **12208** outputs the drive direct current power **118**. The third connector negative voltage output contact **12210** is electrically connected to the third connector negative voltage input contact **12204**. The third connector data output contact **12212** is electrically connected to the third connector data input contact **12206**. The third connector data output contact **12212** outputs the light-controlling signal **120**.

In an embodiment, the light emitting diode system **10** includes a plurality of the second light emitting diode apparatuses **104**. The second connector **112** of a second of the second light emitting diode apparatuses **104** is electrically connected to the third connector **122** of a first of the second light emitting diode apparatuses **104**. The second connector **112** of a third of the second light emitting diode apparatuses **104** is electrically connected to the third connector **122** of the second of the second light emitting diode apparatuses **104**, and so on.

Moreover, the first light emitting diode module **108** (or the second light emitting diode module **116**) includes, for examples but not limited to, at least a light emitting diode and an external driver circuit, or includes a light emitting diode which includes a driver IC.

The advantage of the present invention is that a plurality of light emitting diode lamp strings can be electrically connected to each other in series efficiently, and can share an alternating-current-to-direct-current circuit to save cost.

Although the present invention has been described with reference to the preferred embodiment thereof, it will be understood that the invention is not limited to the details thereof. Various substitutions and modifications have been suggested in the foregoing description, and others will occur to those of ordinary skill in the art. Therefore, all such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended claims.

What is claimed is:

1. A light emitting diode system applied to an alternating current power supply apparatus, the light emitting diode system comprising:

a first light emitting diode apparatus; and

a second light emitting diode apparatus electrically connected to the first light emitting diode apparatus,

wherein the first light emitting diode apparatus comprises:

an alternating-current-to-direct-current and light-controlling unit electrically connected to the alternating current power supply apparatus;

a plurality of first light emitting diode modules electrically connected to each other in series, a first of the first light emitting diode modules electrically connected to the alternating-current-to-direct-current and light-controlling unit, a last of the first light emitting diode modules electrically connected to the alternating-current-to-direct-current and light-controlling unit; and

a first connector electrically connected to the alternating-current-to-direct-current and light-controlling unit and the last of the first light emitting diode modules, and arranged after the last of the first light emitting diode modules,

wherein the second light emitting diode apparatus comprises:

a second connector connected to the first connector;

a signal-converting unit arranged after the second connector and electrically connected to the second connector; and

a plurality of second light emitting diode modules electrically connected to each other in series and arranged after the signal-converting unit, a first of the second light emitting diode modules electrically connected to the signal-converting unit, a last of the second light emitting diode modules electrically connected to the signal-converting unit,

wherein the alternating current power supply apparatus outputs an alternating current power to the alternating-current-to-direct-current and light-controlling unit; the alternating-current-to-direct-current and light-controlling unit converts the alternating current power into a first drive direct current power; the alternating-current-to-direct-current and light-controlling unit outputs the first drive direct current power and a light-controlling signal to the first of the first light emitting diode modules; then the first drive direct current power and the light-controlling signal are transmitted to the other first light emitting diode modules to control colors and intensities of the first light emitting diode modules;

wherein the alternating-current-to-direct-current and light-controlling unit further independently outputs a second drive direct current power to the first connector; the last of the first light emitting diode modules sends the light-controlling signal to the first connector; the first connector sends the second drive direct current power and the light-controlling signal received by the first connector to the second connector, and then the second connector outputs the second drive direct current power and the light-controlling signal to the signal-converting unit; the signal-converting unit outputs the second drive direct current power and the light-controlling signal to the first of the second light emitting diode modules; then the second drive direct current power and the light-controlling signal are transmitted to the other second light emitting diode modules to control colors and intensities of the second light emitting diode modules; and

wherein the first light emitting diode apparatus is connected to the second connector through the first connector, and then is connected to the second light emitting diode apparatus in series through the second connector.

2. The light emitting diode system in claim **1**, wherein the second light emitting diode apparatus further comprises:

a third connector electrically connected to the signal-converting unit, the second connector and the last of the second light emitting diode modules,

wherein the alternating-current-to-direct-current and light-controlling unit outputs the second drive direct current power to the third connector through the first connector and the second connector.

3. The light emitting diode system in claim **2**, wherein the first light emitting diode apparatus further comprises:

an alternating current power connector electrically connected to the alternating current power supply apparatus and the alternating-current-to-direct-current and light-controlling unit.

4. The light emitting diode system in claim **3**, wherein the alternating-current-to-direct-current and light-controlling unit comprises a positive voltage contact, a data output contact, a negative voltage contact and a direct current power supply contact; the positive voltage contact outputs the first drive direct current power; the data output contact outputs the light-controlling signal; the direct current power supply contact outputs the second drive direct current power.

5. The light emitting diode system in claim **4**, wherein the first light emitting diode module comprises a first positive voltage contact, a first data input contact, a first negative voltage contact and a first data output contact;

wherein the first positive voltage contact of the first of the first light emitting diode modules is electrically connected to the positive voltage contact; the first positive voltage contacts of the other first light emitting diode modules are electrically connected to the first negative voltage contacts of a previous of the first light emitting diode modules; the first positive voltage contact outputs the first drive direct current power;

wherein the first data input contact of the first of the first light emitting diode modules is electrically connected to the data output contact; the first data input contacts of the other first light emitting diode modules are electrically connected to the first data output contacts of the previous of the first light emitting diode modules; the first data input contact is used for inputting the light-controlling signal;

wherein the first negative voltage contact of the last of the first light emitting diode modules is electrically connected to the negative voltage contact and the first connector; the first negative voltage contacts of the other first light emitting diode modules are electrically connected to the first positive voltage contacts of a next of the first light emitting diode modules;

wherein the first data output contact of the last of the first light emitting diode modules is electrically connected to the first connector; the first data output contacts of the other first light emitting diode modules are electrically connected to the first data input contacts of the next of the first light emitting diode modules; the first data output contact outputs the light-controlling signal.

6. The light emitting diode system in claim **5**, wherein the first connector comprises:

a first connector direct current power input contact electrically connected to the direct current power supply contact, the first connector direct current power input contact used for inputting the second drive direct current power;

a first connector negative voltage input contact electrically connected to the negative voltage contact and the first negative voltage contact of the last of the first light emitting diode modules;

a first connector data input contact electrically connected to the first data output contact of the last of the first light emitting diode modules, the first connector data input contact used for inputting the light-controlling signal;

a first connector direct current power output contact electrically connected to the first connector direct current power input contact, the first connector direct current power output contact outputting the second drive direct current power;

a first connector negative voltage output contact electrically connected to the first connector negative voltage input contact; and

a first connector data output contact electrically connected to the first connector data input contact, the first connector data output contact outputting the light-controlling signal.

7. The light emitting diode system in claim **6**, wherein the second connector comprises:

a second connector direct current power input contact electrically connected to the first connector direct current power output contact, the second connector direct current power input contact used for inputting the second drive direct current power;

a second connector negative voltage input contact electrically connected to the first connector negative voltage output contact;

a second connector data input contact electrically connected to the first connector data output contact, the second connector data input contact used for inputting the light-controlling signal;

a second connector direct current power output contact electrically connected to the second connector direct current power input contact, the second connector direct current power output contact outputting the second drive direct current power;

a second connector negative voltage output contact electrically connected to the second connector negative voltage input contact; and

a second connector data output contact electrically connected to the second connector data input contact, the second connector data output contact outputting the light-controlling signal.

8. The light emitting diode system in claim **7**, wherein the signal-converting unit comprises:

a control side direct current power input contact electrically connected to the second connector direct current power output contact, the control side direct current power input contact used for inputting the second drive direct current power;

a control side negative voltage input contact electrically connected to the second connector negative voltage output contact;

a control side data input contact electrically connected to the second connector data output contact, the control side data input contact used for inputting the light-controlling signal;

a control side direct current power output contact electrically connected to the first of the second light emitting diode modules, the control side direct current power output contact outputting the second drive direct current power;

a control side negative voltage output contact electrically connected to the control side negative voltage input contact; and

a control side data output contact electrically connected to the first of the second light emitting diode modules, the control side data output contact outputting the light-controlling signal.

9. The light emitting diode system in claim **8**, wherein the second light emitting diode module comprises a second positive voltage contact, a second data input contact, a second negative voltage contact and a second data output contact;

wherein the second positive voltage contact of the first of the second light emitting diode modules is electrically connected to the control side direct current power output contact; the second positive voltage contacts of the other second light emitting diode modules are electrically connected to the second negative voltage contacts of a previous of the second light emitting diode modules; the second positive voltage contact is used for inputting the second drive direct current power;

wherein the second data input contact of the first of the second light emitting diode modules is electrically connected to the control side data output contact; the second data input contacts of the other second light emitting diode modules are electrically connected to the second data output contacts of the previous of the second light emitting diode modules; the second data input contact is used for inputting the light-controlling signal;

wherein the second negative voltage contact of the last of the second light emitting diode modules is electrically connected to the control side negative voltage output contact and the third connector; the second negative voltage contacts of the other second light emitting diode modules are electrically connected to the second positive voltage contact of a next of the second light emitting diode modules;

wherein the second data output contact of the last of the second light emitting diode modules is electrically connected to the third connector; the second data output contacts of the other second light emitting diode modules are electrically connected to the second data input contact of the next of the second light emitting diode modules; the second data output contact outputs the light-controlling signal.

10. The light emitting diode system in claim **9**, wherein the third connector comprises;

a third connector direct current power input contact electrically connected to the second connector direct current power output contact and the control side direct current power input contact, the third connector direct current power input contact used for inputting the second drive direct current power;

a third connector negative voltage input contact electrically connected to the control side negative voltage output

contact and the second negative voltage contact of the last of the second light emitting diode modules;

a third connector data input contact electrically connected to the second data output contact of the last of the second light emitting diode modules, the third connector data input contact used for inputting the light-controlling signal;

a third connector direct current power output contact electrically connected to the third connector direct current power input contact, the third connector direct current power output contact outputting the second drive direct current power;

a third connector negative voltage output contact electrically connected to the third connector negative voltage input contact; and

a third connector data output contact electrically connected to the third connector data input contact, the third connector data output contact outputting the light-controlling signal.

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